

A STUDY ON FEASIBILITY OF CHROMOSOME SET MANIPULATIONS IN THE MARINE SHRIMP, *SICYONIA INGENTIS*

The feasibility of manipulation of chromosome sets was studied in the ridgeback prawn, *Sicyonia ingentis*, to develop new techniques for chromosome karyotype study in shrimps, to elucidate the effects of hot and cold shock or chemical induction on chromosome set manipulation, and to present a cytological analysis of haploidy, diploidy,

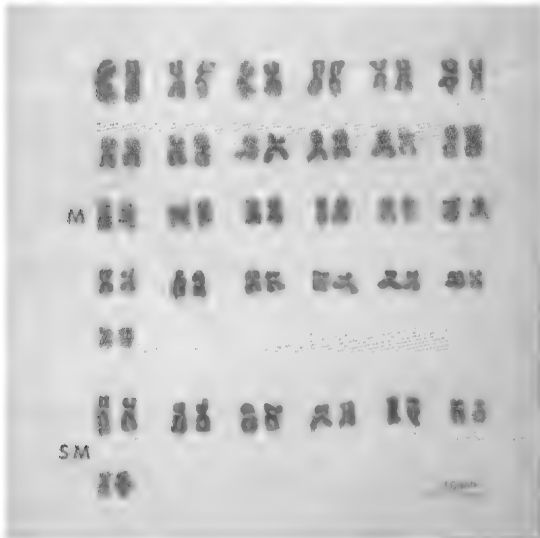


FIG. 1. Karyotype of the marine shrimp *Sicyonia ingentis* ($2n = 50M + 14SM$).

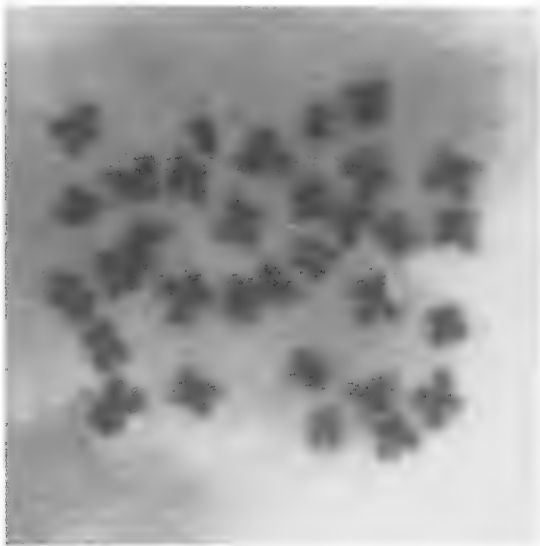


FIG. 2. Haploid chromosome of *Sicyonia ingentis*, from nauplius.

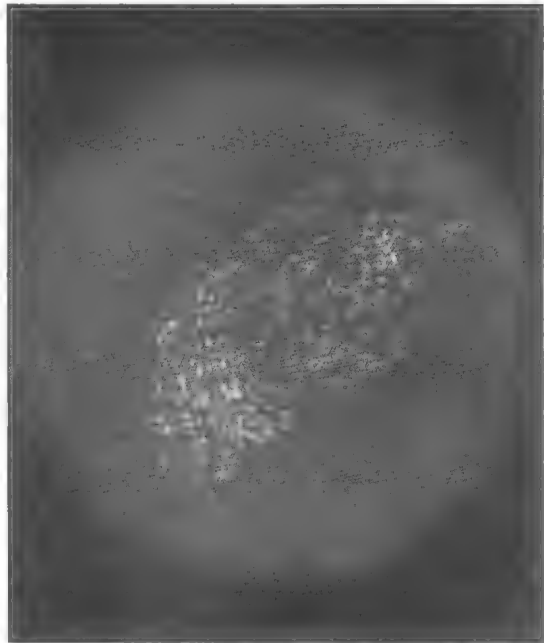


FIG. 3. Polyploid chromosome of *Sicyonia ingentis*, from egg under fluorescence microscopy.

triploidy and other polyploidy. Artificially induced spawned eggs of this shrimp were fertilized by UV-irradiated sperm from the seminal receptacles of the females to induce haploidy. Normally fertilized eggs were subjected to hot, cold or chemical (colchicine or cytochlasin D) shock to induce polyploidy.

This study showed that *S. ingentis* has 64 chromosomes (50M + 14SM) using newly developed techniques with embryos and nauplii. Chromosomes were detected successfully by fluorescence microscopy and/or air-dried method. Haploidy was induced by UV-irradiating sperms and higher haploid rate was observed in eggs than in nauplii. Triploidy and/or tetraploidy were obtained in the polyploid inducing experiments. The efficiency of induction depended heavily on the time between spawning and treatment, temperature, and duration of treatment. Because the eggs were too fragile to be handled before the formation of hatching envelopes, the second polar body could be retained more easily than the first one. However, an optimal procedure for treatment needs to be developed.

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